

**2. Amendments to the Drawing Figures:**

The attached drawing sheet includes proposed changes to FIG. 1 and replaces the original and any replacement sheets including FIG. 1.

Attachment: Replacement Sheet (FIG. 1)

### **3. Remarks/Discussion of Issues**

#### ***Claim Summary***

By the Amendment, claims 7-10 have been canceled, without prejudice and without disclaimer of the subject matter. Claims 1-6 and 11-16 have been amended to more clearly define the invention, and claims 17-21 have been submitted for the Examiner's consideration. No new matter has been added.

Claims 1-16 and 11-21 remain pending in the application. Applicants respectfully submit that all pending claims are in condition for allowance.

#### ***Drawings***

The Examiner objected to FIG. 1 of the drawings for asserted improper use of lead lines and allowing letters to cross lines. See Final Office Action, p. 2. FIG. 1 has been amended in the present Amendment to address at least the issues raised by the Examiner. No new matter has been added.

Accordingly, an indication of approval of the newly submitted drawing is respectfully requested.

#### ***Rejection under 35 U.S.C. § 101***

In the Final Office Action, dated July 14, 2008, the Examiner rejected claims 7-10 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. See Final Office Action, p. 3.

Without admitting to the propriety of the Examiner's rejection, Applicants have canceled claims 7-10, without prejudice and without disclaimer of subject matter. Therefore, Applicants submit that the rejection of claims 7-10 is moot.

#### ***Rejection under 35 U.S.C. § 112, First Paragraph***

In the Final Office Action, dated July 14, 2008, the Examiner rejected claims 1-16 under 35 U.S.C. § 112, first paragraph, based on lack of enablement by the specification. See Final Office Action, p. 3. In particular, the Examiner asserts that

the specification does not reasonably provide enablement of "other body parts."  
Applicants respectfully traverse the rejection.

The standard for determining compliance with 35 U.S.C. § 112, first paragraph, is "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." See MPEP § 2163.02 (quoting *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989)). Significantly, "[t]he subject matter of the claim need not be described literally." *Id.* In other words, a rejection under 35 U.S.C. § 112, first paragraph, is not appropriate where one of ordinary skill in the art would find adequate disclosure of the claimed subject matter in the written description.

As stated in the previous Amendment, one of ordinary skill in the relevant art would readily understand that "other body part" refers to any portion of the patient's body capable of being imaged by the disclosed means, which includes organs. Without admitting to the propriety of the Examiner's rejection, Applicants have replaced both terms with "target object," which Applicants submit is sufficiently enabling for one of ordinary skill in the art to recognize that Applicants invented what was claimed. Withdrawal of the rejection of claims 1-16 is therefore requested.

***Rejection under 35 U.S.C. § 112, Second Paragraph***

In the Final Office Action, dated July 14, 2008, the Examiner rejected claims 7-10 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. See Final Office Action, p. 4.

Without admitting to the propriety of the Examiner's rejection, Applicants have canceled claims 7-10, without prejudice and without disclaimer of subject matter. Therefore, Applicants submit that the rejection of claims 7-10 is moot.

**35 U.S.C. § 102 Rejection - Claims 1-3, 5, 7-9, 11-13 and 15**

The Final Office Action of July 14, 2008, rejects claims 1-3, 5, 7-9, 11-13 and 15 under 35 U.S.C. 102(b) as being anticipated by MALASSIOTIS et al., *Tracking*

*the Left Ventricle in Echocardiographic Images by Learning Heart Dynamics.*

Applicants respectfully traverse the rejection because MALASSIOTIS et al. does not disclose each and every element of the claims.

Applicants rely at least on the following standards with regard to proper rejections under 35 U.S.C. § 102. Notably, anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. See, e.g., *In re Paulsen*, 30 F.3d 1475, 31 USPQ2d 1671 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Alternatively, anticipation requires that each and every element of the claimed invention be embodied in a single prior art device or practice. See, e.g., *Minnesota Min. & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992). For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. See, e.g., *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 1001 (Fed. Cir. 1991).

Applicants' silence on certain aspects of the rejection is by no means a concession as to their propriety. Rather, because the applied art fails to disclose at least one feature of the claims, for at least the reasons discussed below, Applicants respectfully submit that the rejections are improper and should be withdrawn.

#### Claim 1

Independent claim 1 recites, in part:

"... a transform calculator for performing a series of transformations, wherein each transformation comprises a fitting operation between two images of said first series of images, wherein the first segmentation on the first image of the first series of images is modified and subsequently applied to the transformation of each further image of the first series of images that fits the first image to said further image of the first series of images."

The Final Office Action asserts that a transformation including a fitting operation between two images is disclosed at pages 284 and 286 of MALASSIOTIS et al. See Final Office Action, p. 6. In particular, the Examiner refers to "minimum energy solution," which refers to  $V_i^*$  representing "snake points" showing an active contour of an image.  $V$  is a set of order points =  $\{v_1, v_2, \dots, v_N\}$  on an image grid, and would therefore appear to correlate to one image as opposed to two images of a series of images. See MALASSIOTIS et al., p. 283 (right column). Further, Applicants respectfully disagree that determining a minimum energy solution for points on a closed contour discloses a fitting operation between images, simply because the determination apparently incorporates other snake points of the contour.

Further, with respect to the fitting operation, claim 1 recites that the transformation of further images of the first series of images fits the first image to each further image. The Final Office Action asserts that this feature is disclosed by frames in a sequence being ultimately transformed based on the initial fit of the first frame's boundary, stating "since frame N depended from frame N-1, ..., frame 3 depended from frame 2, frame 2 depended from frame 1." See Office Action, p. 6. However, assuming only for the sake of argument that the alleged transformations constitute a fitting operation, this sequence at best would disclose fitting successive pairs of images, not fitting the first image to each of the images.

Accordingly, for at least the reasons set forth above, Applicants respectfully submit that the applied art fails to disclose at least one feature of claim 1. Thus a *prima facie* case of anticipation has not been established. Therefore, withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(b) respectfully requested.

#### Claim 11

Independent claim 11 recites, in part:

*"... performing a series of transformations wherein each transformation comprises a fitting operation between two images of said series of image; and modifying and applying the first segmentation on the first image of the first series of*

*images to each transformation of the sequence of transformations that respectively fits the first image to each further image of the first series of images."*

The Final Office Action relies on the same asserts set forth in rejecting claim 1 with respect to claim 11. See Final Office Action, p. 8. Accordingly, Applicants submit that the applied art fails to disclose at least one feature of claim 11 for substantially the same reasons as discussed above with respect to claim 1. Thus a *prima facie* case of anticipation has not been established. Therefore, withdrawal of the rejection of claim 11 under 35 U.S.C. § 102(b) respectfully requested.

Claims 2, 3, 5, 7-9, 12, 13 and 15

With regard to claims 2, 3, 5, 12, 13 and 15, Applicants assert that they are allowable at least because they depend, directly or indirectly, from independent claims 1 and 11, respectively, which Applicants submit have been shown to be allowable, and in view of their additional recitations of novelty. Claims 7-9 have been canceled, as stated above.

**35 U.S.C. § 103**

As stated in MPEP § 2143, in order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Without conceding the propriety of the combination of references discussed below, Applicants respectfully submit that the obviousness rejections are improper for failing to meet the ultimate requirement of § 2143. Further, Applicants' silence on certain aspects of the rejections is by no means a concession as to their propriety. Rather, because the applied art fails to disclose at least one feature of the claims, for

at least the reasons discussed below, Applicants respectfully submit that the rejections are improper and should be withdrawn.

***Rejection under 35 U.S.C. § 103 – Claims 4 and 14***

Claims 4 and 14 were rejected under 35 U.S.C. 103(a) as being obvious over MALASSIOTIS et al. in view of QIAN (U.S. Patent No. 5,381,791). Applicants respectfully traverse the rejections for at least the reasons set forth below.

The Examiner relies on QIAN to teach only series of images being collected with different means of monitoring. QIAN therefore does not cure the deficiencies of MALASSIOTIS et al., discussed above with respect to independent claims 1 and 11.

Accordingly, Applicants respectfully submit that claims 4 and 14 are allowable at least because they depend indirectly from independent claims 1 and 11, respectively, which Applicants submit have been shown to be allowable, as well as for reasons related to their own recitations.

***Rejection under 35 U.S.C. § 103 – Claims 6, 10 and 16***

Claims 6, 10 and 16 were rejected under 35 U.S.C. 103(a) as being obvious over MALASSIOTIS et al. in view of SHEEHAN et al. (U.S. Patent No. 5,435,310). Applicants respectfully traverse the rejections for at least the reasons set forth below.

The Examiner relies on SHEEHAN et al. to teach only converting a series of images showing walls of an organ in a flat plane, etc. SHEEHAN et al. therefore does not cure the deficiencies of MALASSIOTIS et al., discussed above with respect to independent claims 1 and 11.

Accordingly, Applicants respectfully submit that claims 6 and 16 are allowable at least because they depend from independent claims 1 and 11, respectively, which Applicants submit have been shown to be allowable, as well as for reasons related to their own recitations. Claim 10 has been canceled, as stated above.

***New Claims 17-21***


Applicants respectfully submit that the applied art fails to disclose newly submitted claims 17-21 at least for the same reasons as discussed above with respect to claims 1-6 and 11-16.

**CONCLUSION**

No other issues remaining, reconsideration and favorable action upon the claims 1-6 and 11-21 now pending in the application are requested.

If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

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